

REMARKS

After entry of the foregoing amendment, claims 1, 12, 13, 14, 16 and 26 to 36 will be pending. Claims 2 to 11, 15, and 17 to 25 have been canceled, without prejudice.

Claim 1 has been amended by incorporating features of claim 11, which the Examiner indicated was allowable, but for its dependence from a rejected base claim. Similarly, claims 13 and 16, which the Examiner also indicated were allowable, but for their dependence from a rejected base claim, have been rewritten as independent claims. Editorial revisions to claim language have also been made.

Claims 26 and 34 have been amended to specify that the catalytically active phase catalyses a selective gas phase reaction. This amendment is intended to clarify and make explicit that the recitation in the preamble of these claims of "selectively reacting reagents in a gas phase [exothermic or endothermic] reaction" is not merely a recitation of the intended use of the method.

In view of this amendment, Applicants again respectfully submit that the methods defined by claims 26 and 34 are nonobvious over Hershkowitz et al., U.S. Patent No. 5,883,138 ("Hershkowitz") in view of Matros et al., U.S. Patent No. 6,314,722 ("Matros"), because both references are directed solely to non-selective gas phase reactions, while claims 26 and 34 are explicitly directed to selective reactions. In the technical field of catalytic reactions, the terms "selective" and "non-selective" are standard terms that are used to distinguish between two distinct types of reaction. Evidence of this may be found by comparing Hershkowitz and Matros (which relate to non-selective reactions) with, *inter alia*, EP1169287 B1 and EP0326392 B1, which relate to selective-reactions. Further evidence of the distinction between "selective" and "non-selective" reactions may be found in the following publications, abstracts of which are enclosed:

- Applied Catalysis B: Environmental 46, 2003, 121
- Applied Catalysis B: Environmental 28, 2000, 43
- Catalysis Today 89, 2004, 379

As mentioned previously, Hershkowitz describes in large part a premixing apparatus that premixes reagents at high velocities before injecting them into a reaction zone containing

a catalyst retained in a fixed arrangement.¹ According to Hershkowitz, it is this premixing at high velocity, along with a relatively high pressure drop through the mixer, that forces the reaction to favor a desired stoichiometry once injected into the reaction zone. *See* col. 5, lines 1-5. Hershkowitz does not disclose or suggest that the characteristics of a monolithic catalyst support structure may affect the selectivity of the reactions described therein. Similarly, Matros is devoted to the disclosure of a converter for purifying exhaust gases, and particularly for controlling NO_x and soot emissions. The reactions described by Matros are also non-selective.

In contrast, in the methods of the present invention, it is the structure of the monolith support itself which affects selectivity of the gas phase reactions that take place within the structure. Because the metallic monolith is at the same time the support for catalytically active material and the medium for efficiently removing the heat of reaction (thus minimizing hot spots), catalyst deactivation is prevented or slowed thereby increasing selectivity of reactions. *See* specification as originally filed at, *inter alia*, page 4, lines 6-9 and page 6, lines 27-30. A skilled person concerned with providing an improved catalyst for selective gas-phase exothermic reactions would not even consider either the Hershkowitz or Matros references, as they relate to completely different technical problems, and the technology used in non-selective reactions is generally not adaptable for use in selective reactions. Therefore, no *prima facie* case of obviousness has been established by the Office Action because there is no motivation to combine the cited references for use in *selective gas-phase reactions*. Moreover, even if the references were combined, they fail to teach or suggest all of the limitations of the pending claims because they do not disclose the use of a metallic monolith catalyst support in selective gas-phase reactions.

¹ Hershkowitz relates to a system of injectors designed to obtain a particular fluidynamic regime in the reaction zone, for example to ensure good mixing of reagents and short residence time in the reaction zone. Very little of the disclosure is directed to describing the structure and use of the reaction zone itself.


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CONCLUSION

The foregoing represents a good faith effort to resolve all issues raised in the Office Action to advance prosecution of this application to allowance. Applicants respectfully submit that the claims are now in condition for allowance, and therefore respectfully request a Notice of Allowance of all of pending claims 1, 12, 13, 14, 16 and 26 to 36.

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S. Maurice Valla
Registration No. 43,966

Woodcock Washburn LLP
One Liberty Place - 46th Floor
Philadelphia PA 19103
Telephone: (215) 568-3100
Facsimile: (215) 568-3439